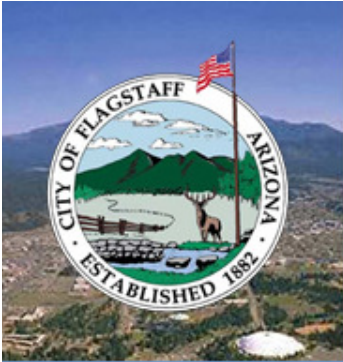




Red Gap Ranch Pipeline Alignment Study Public Open House

Flagstaff City Hall

Jan. 8, 2009



Today's Presentation

- Update on progress since last Open House (Sept. 18, 2008)
- Present results of alignment analysis
- Present alignment recommendation



Progress Update

- ☛ Pipeline sizing and costing
- ☛ Alignment evaluations
 - Geotechnical
 - Environmental
 - Land
- ☛ Modeling
- ☛ Workshop #2 (Nov. 12)



Red Gap Ranch





Alignment Feedback From Water Commission and Open House

Red Gap Ranch

BNSF Railroad Alignment

- Rough Terrain
- Construction Complexity
- Safety Issues

ATT Fiber Optic Alignment

- No clear path
- High cost
- Extremely difficult

Western APS Alignment

- More direct route (Townsend/Winona)
- More clearing required than alternative

New Water Treatment Plant

New Water Treatment Plant

Telephone Line Alignment

- Extends through Walnut Canyon
- Clearing of national forest
- Heavy environmental impacts

Railroad Alignment

APS Power Line Alignment

I-40 Frontage Alignment

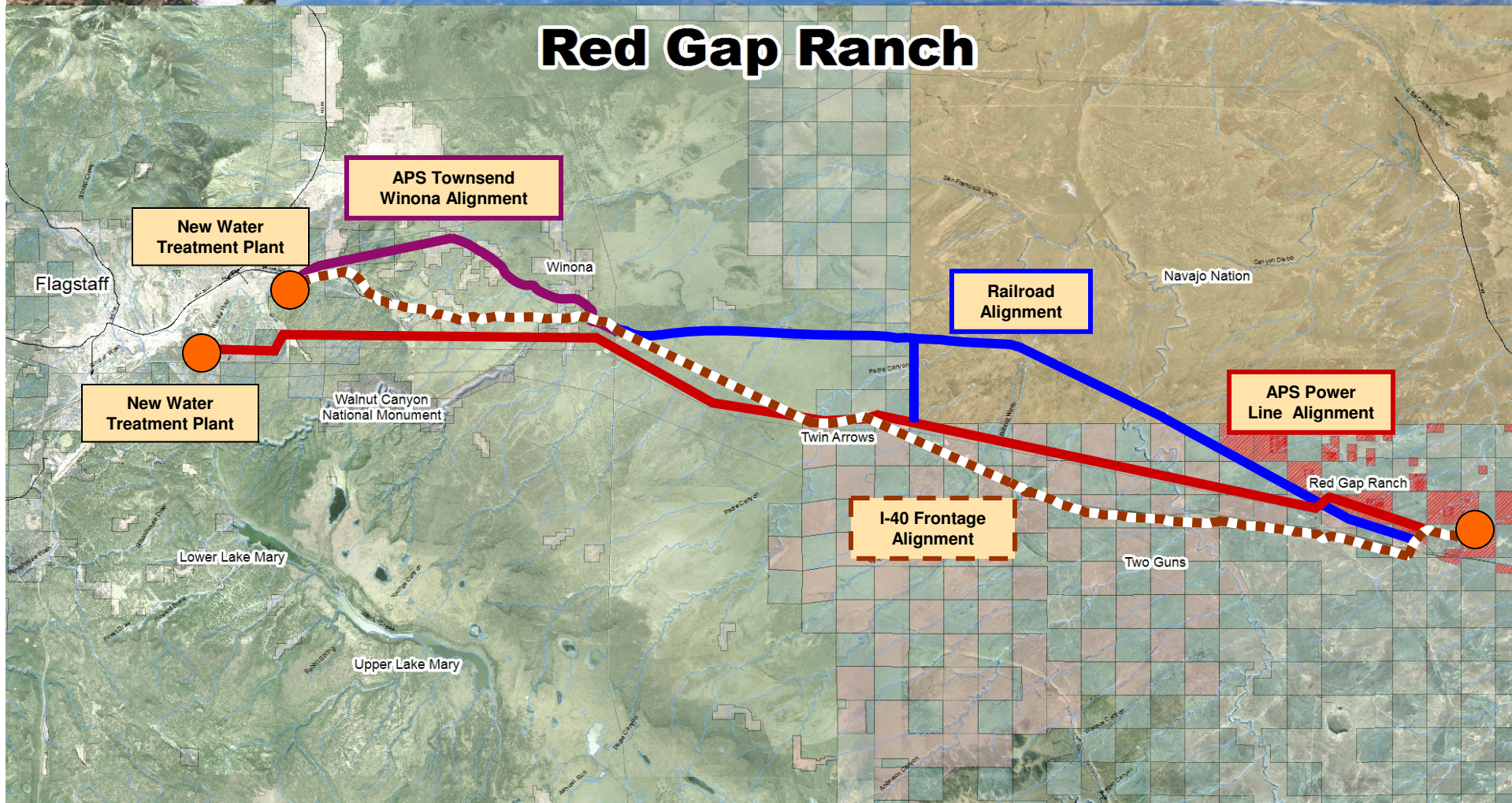
Lake Mary Refined Alignment

- Additional length and cost (additional \$32M to \$37M)
- Highest Elevation
- Geotechnical obstacles (Basalt)
- Numerous environmental and archeological obstacles



Alignments Screened for Final Study

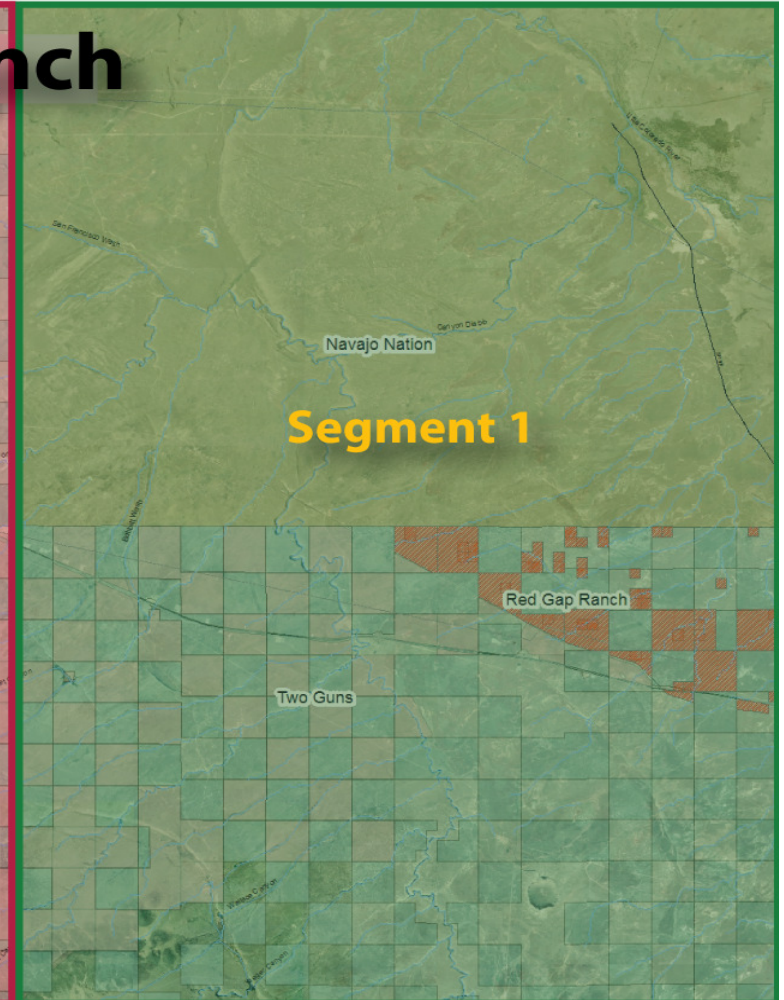
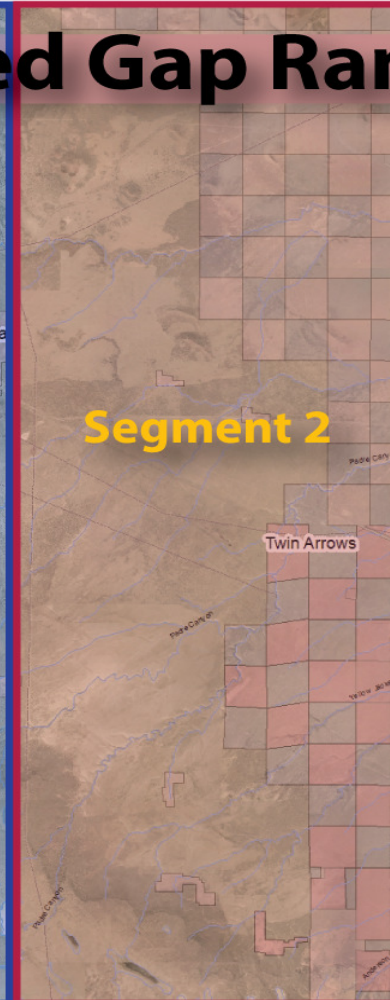
Red Gap Ranch





Segment Definition

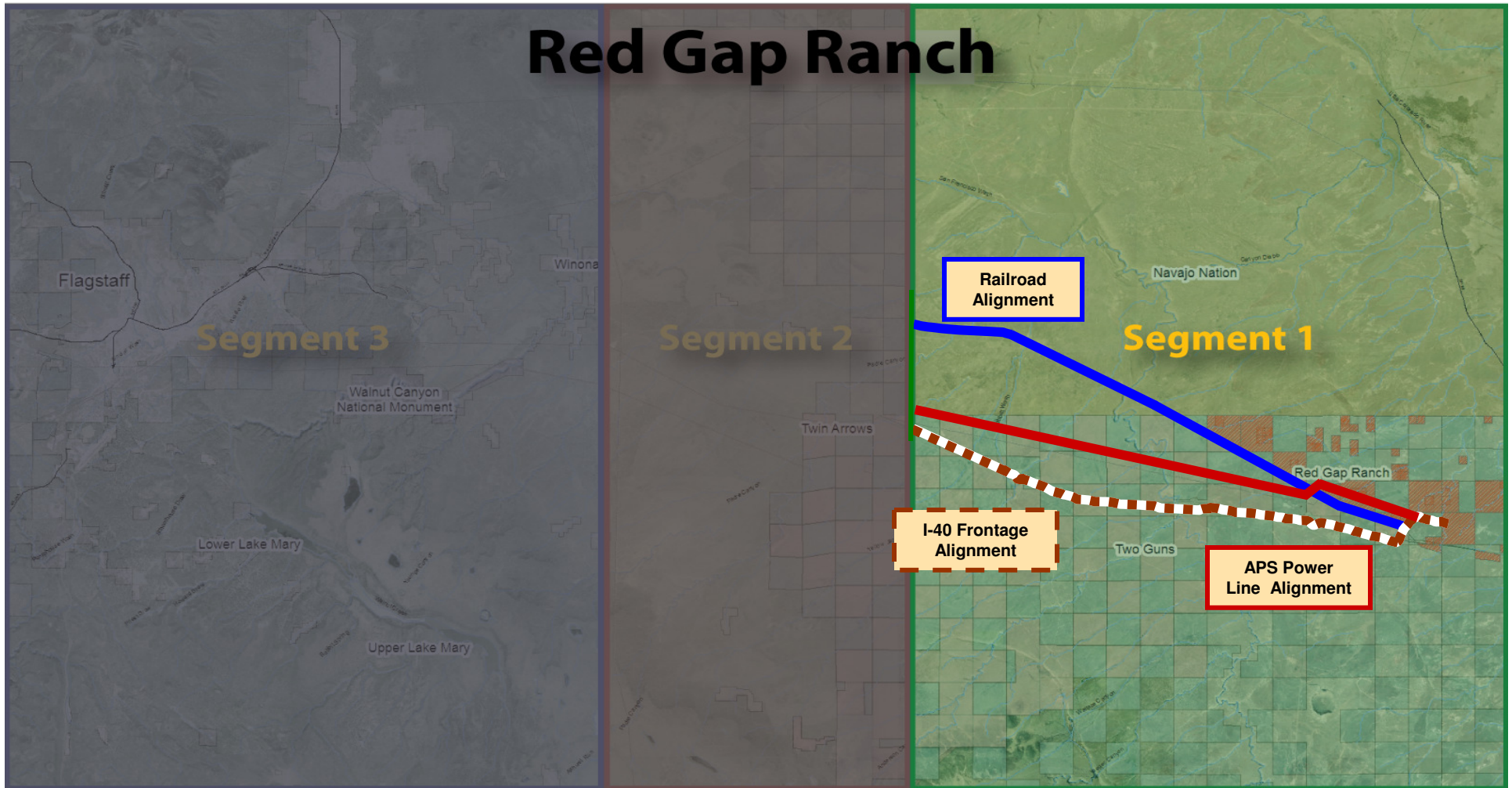
Red Gap Ranch





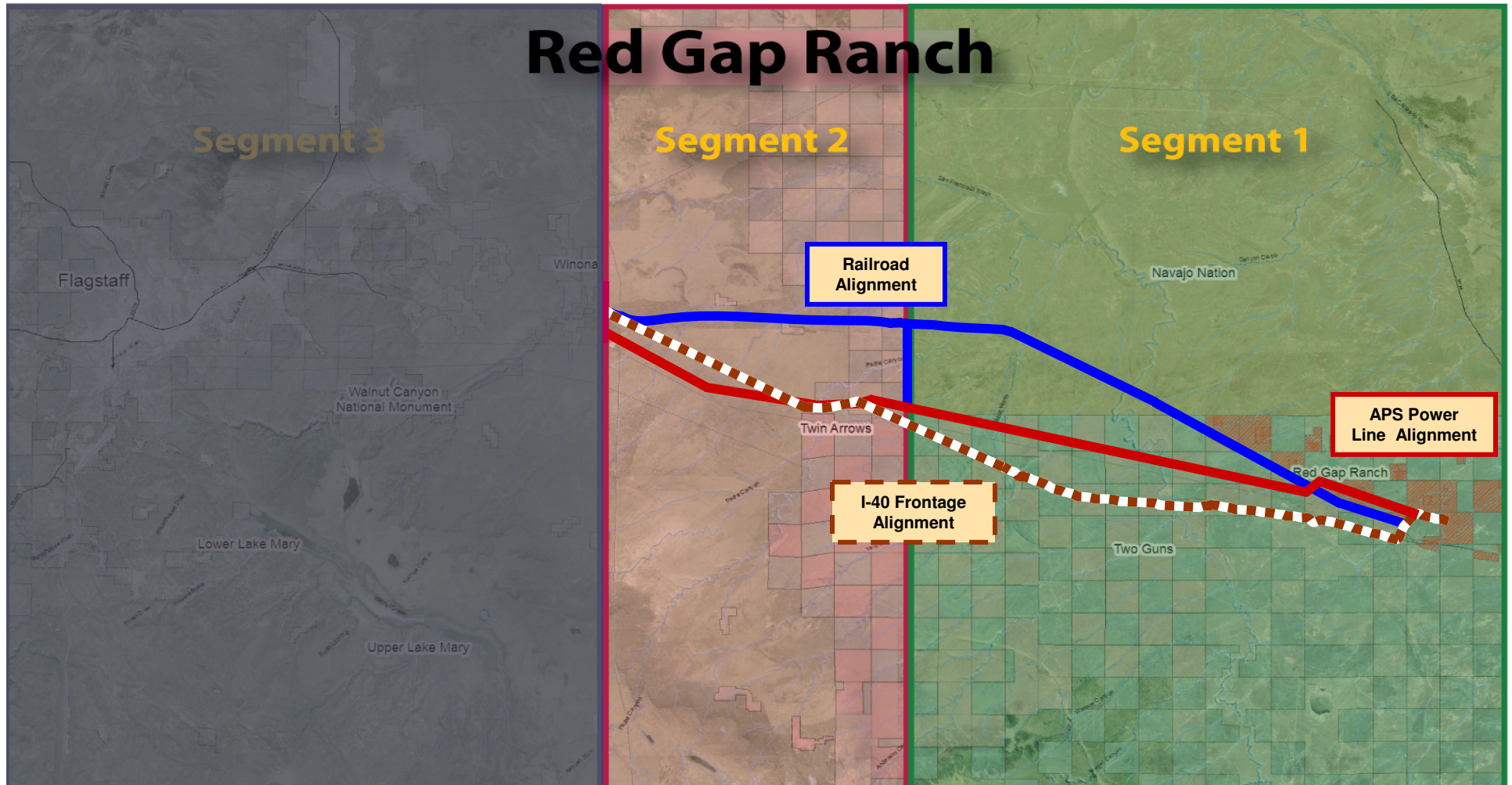
Remaining Alignments for Detailed Study and Model

Red Gap Ranch



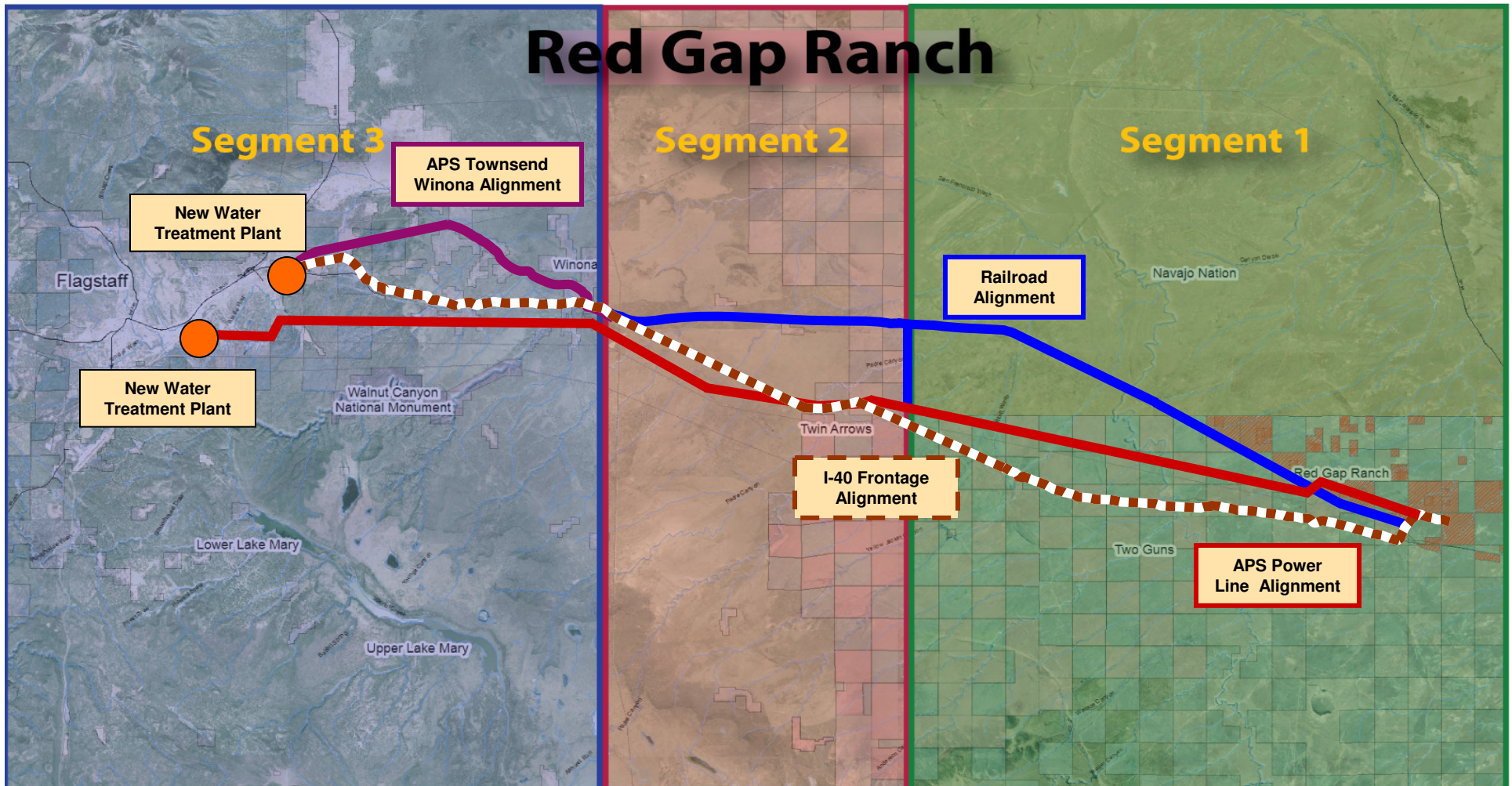


Remaining Alignments for Detailed Study and Model





Remaining Alignments for Detailed Study and Model





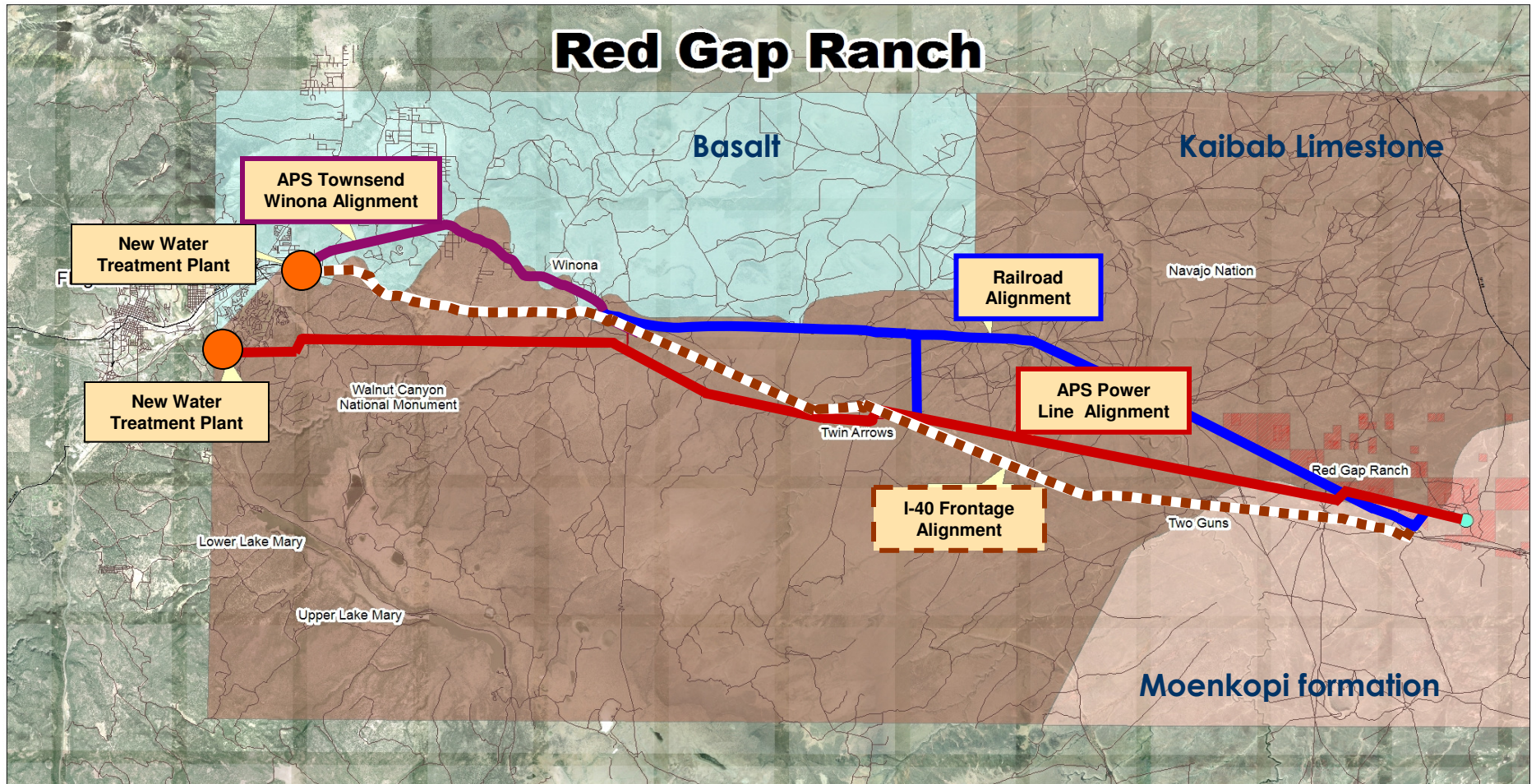
Data Gathering and Analysis on Studied Routes

- Geotechnical
- Environmental
- Land
- Cost



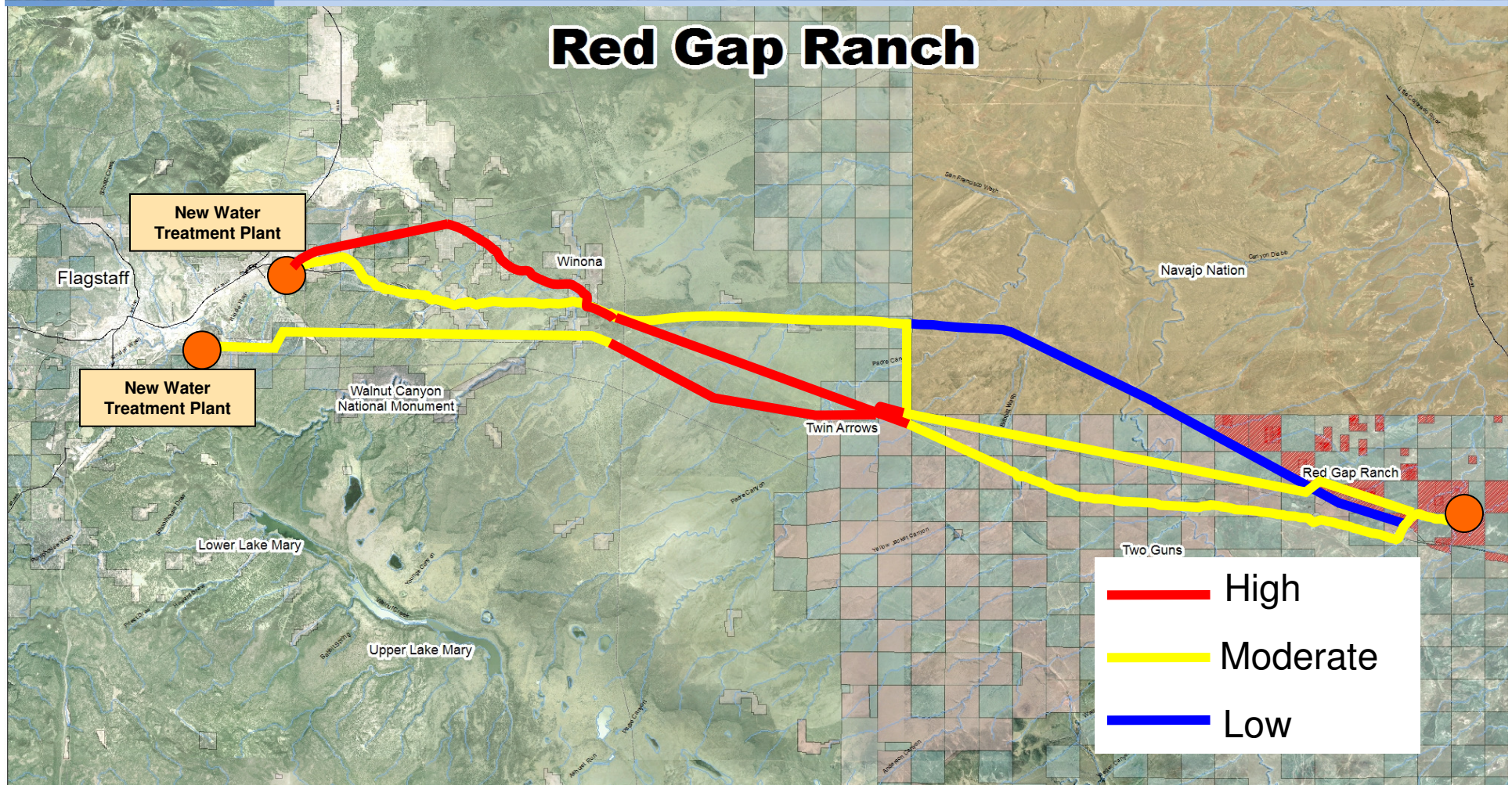


Geotechnical Information





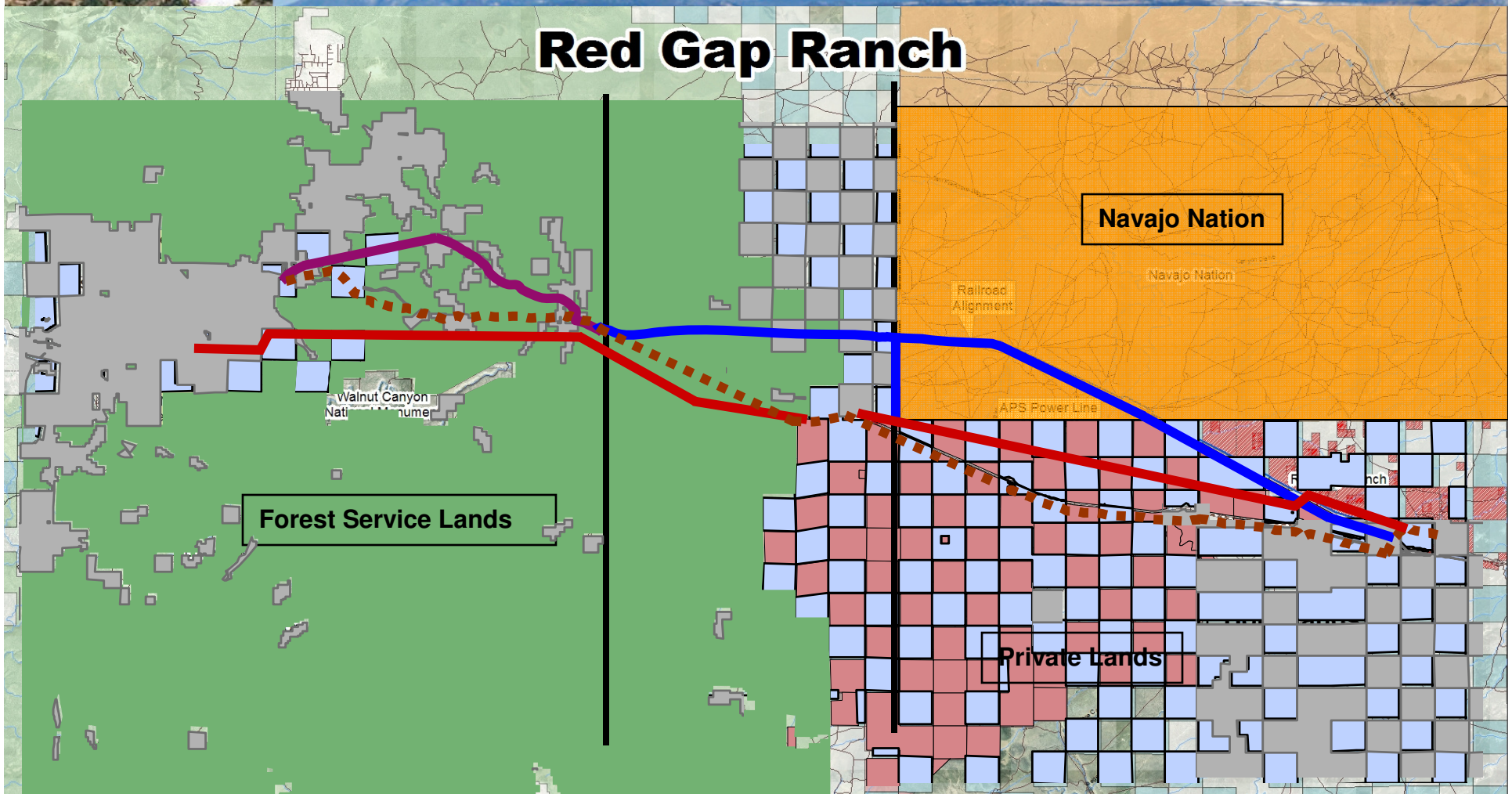
Archeological Impact/Disturbance





Land Information

Red Gap Ranch





Evaluation Model

OBJECTIVE

GOALS

FACTORS

MEASURES

Preferred Alignment

**Least Project
Risk**

**Least
Environmental
Impact**

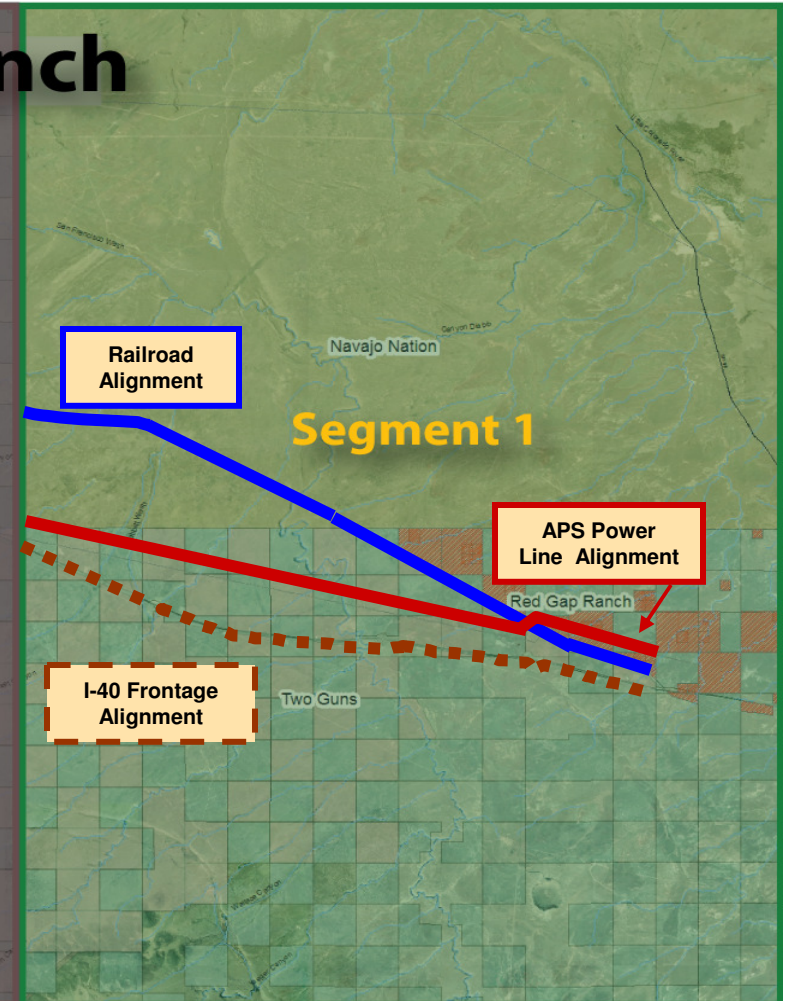
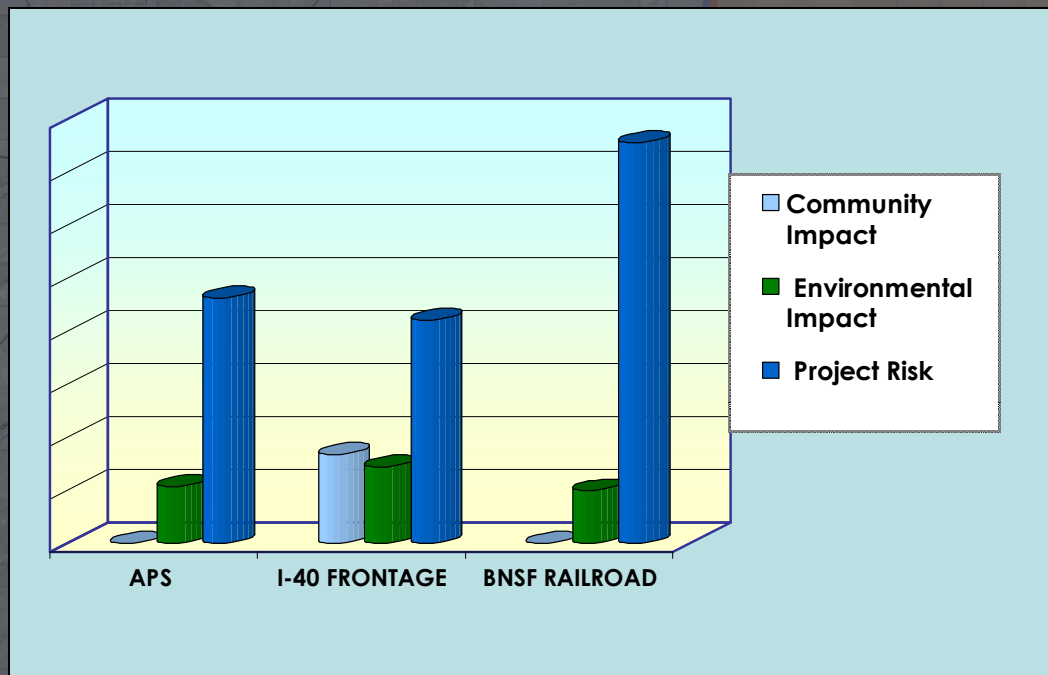
**Least
Community
Impact**

Least Cost



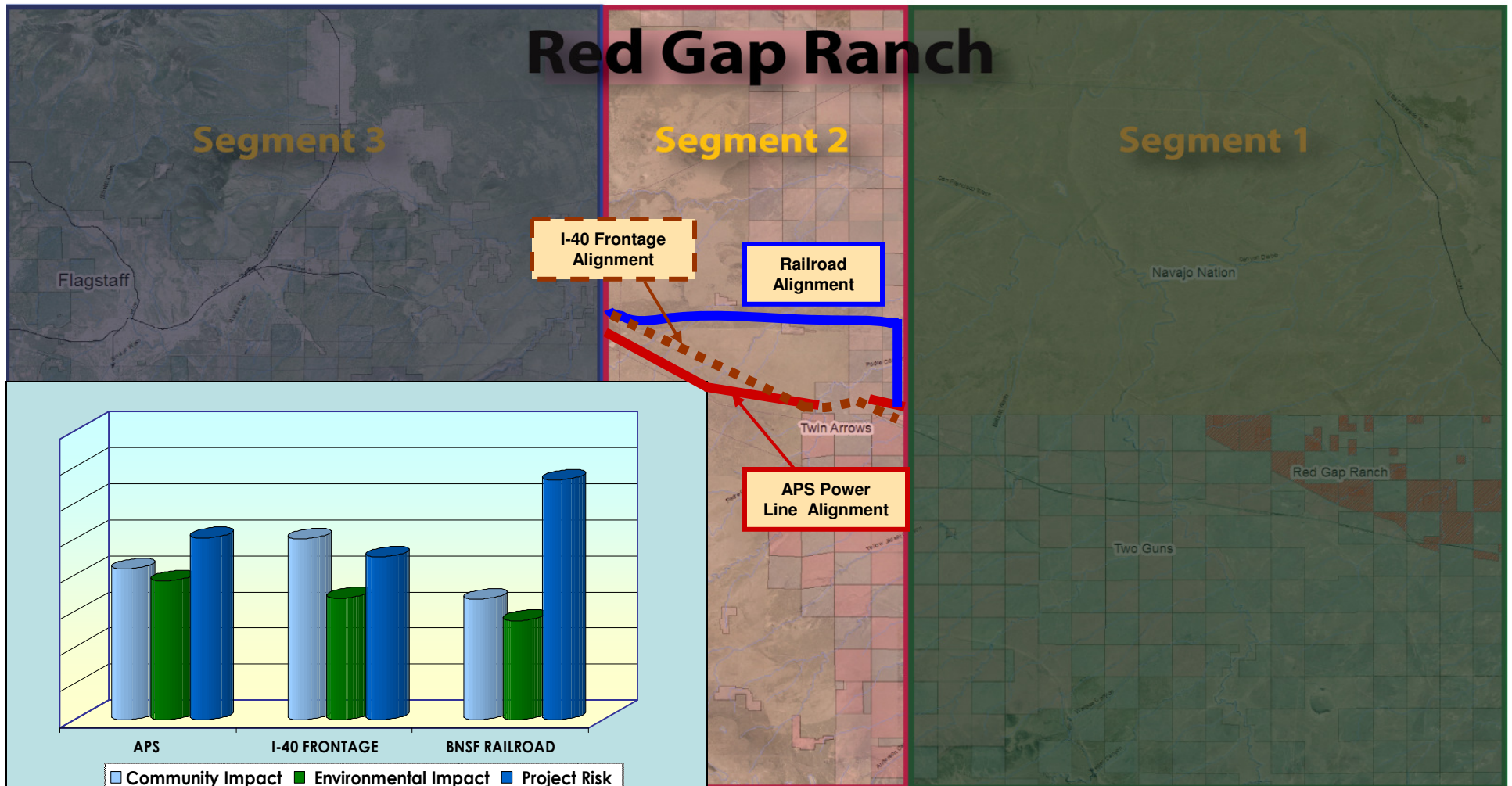
Segment 1 Results

Red Gap Ranch





Segment 2 Results





Segment 3 Results

Red Gap Ranch

Segment 2

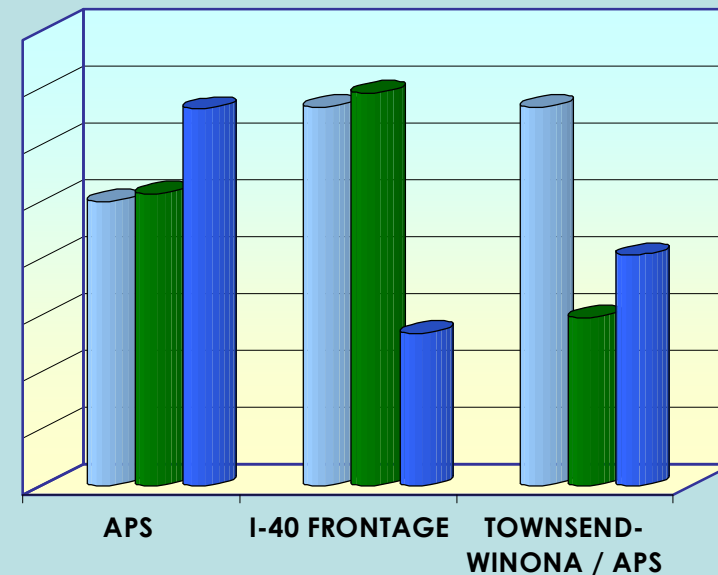
Segment 1

Segment 3

Townsend-
Winona
Alignment

APS Power
Line Alignment

I-40 Frontage
Alignment



Community
Impact

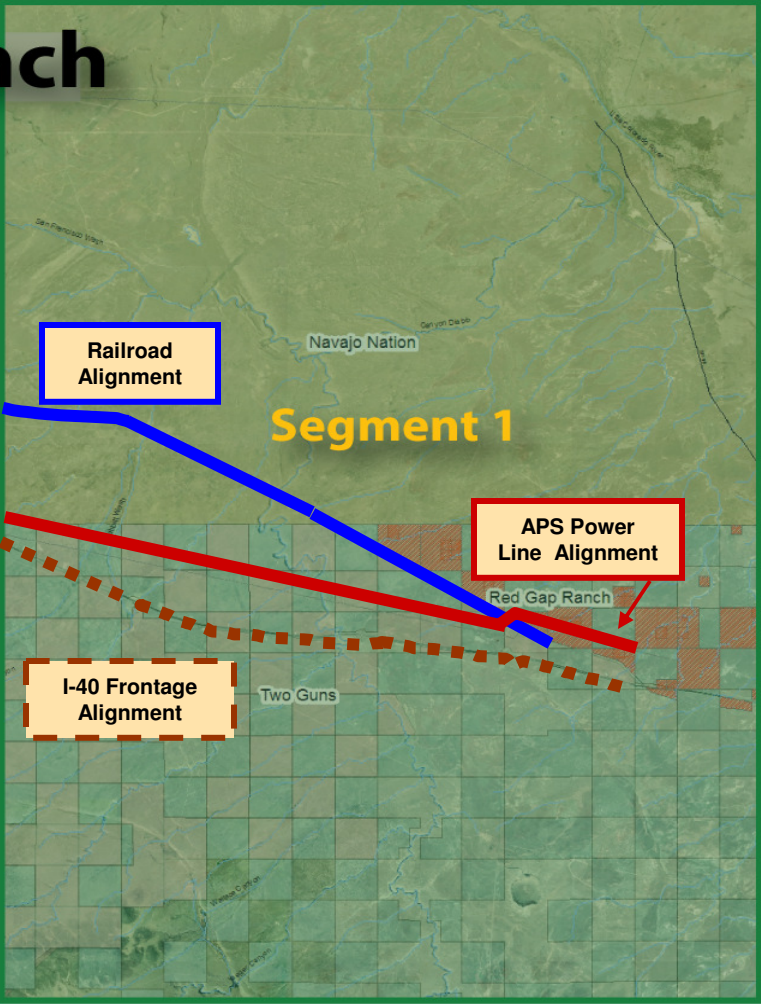
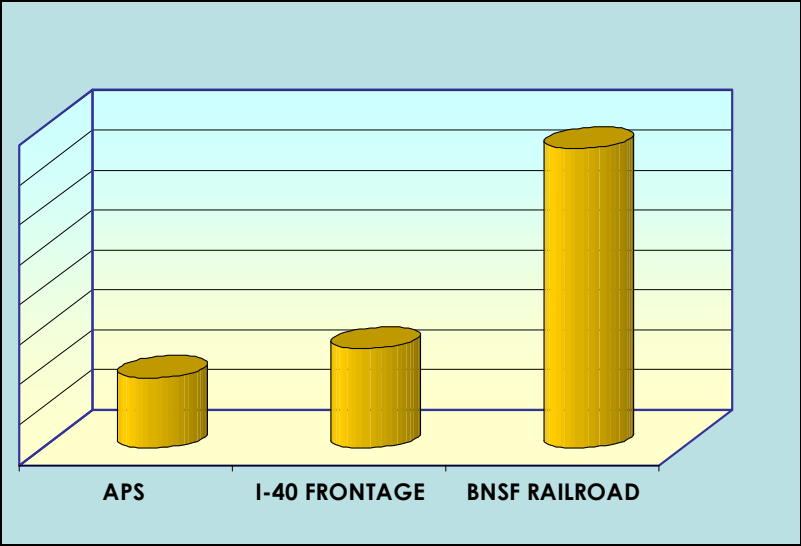
Environmental
Impact

Project Risk



Segment 1 Cost Comparison

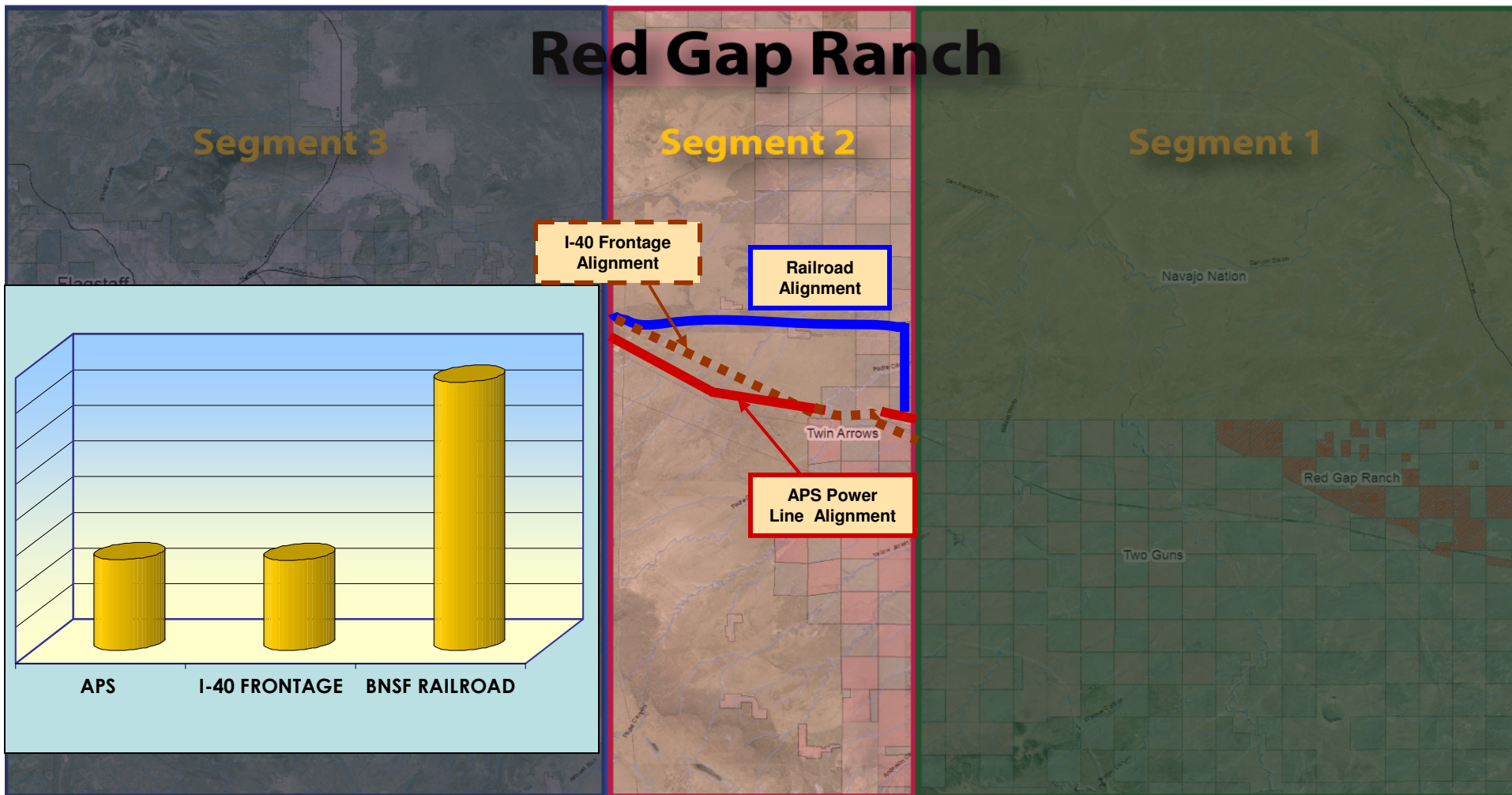
Red Gap Ranch





Segment 2 Cost Comparison

Red Gap Ranch





City of Flagstaff - Red Gap Ranch Pipeline Project

JACOBS

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